



Joint Warfare System (JWARS)

Liaison

ASNE MSEA Internal Review

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Overview

- What is a JWARS?
- ASNE MSEA Support History
- FY03/04/05 Milestones



JWARS Mission

- To develop a state-of-the-art, **closed form** simulation of **joint, campaign-level** warfare that:
 - Represents uniquely joint functions and processes and component warfare operations
 - Is based on joint doctrine
- ***Is capable of representing future warfare***
- ***Supports analysis***
 - Force structure
 - System (program) trade-off **analysis**
 - Warfighting course-of-action **analysis**



Extracts from JWARS ORD

- Balanced representations of joint theater warfare in a realistic ***environment***
- JWARS shall maintain ground truth and current ***perceptions*** for each side...ability to make and execute informed decisions (based on) ***perceptions***



Extracts from JWARS ORD

- ...shall require ***environmental support*** in terms of ***accurate, authoritative representation of environmental data*** (e.g., meteorological, oceanographic, space, and terrain) at a sufficient level of detail to ***credibly*** capture the impact on the campaign
- Support...courses of action and risk assessments....Includes (s)ituation assessment (***weather***....



Background

- A faster-than-real-time, discrete event simulation with user-selectable deterministic and stochastic properties (up to 1000x real time)
- No HITL
- They don't model systems, they model the effects of systems
 - E.g., they don't model or "fly" a sensor. They model the sensor "capability" (with detect, recognize, identify attributes) and turn the sensor "capability" on/off when the carrier platform enters/leaves the surveillance area.



Background

- A perception-based model
- A stochastic (Monte Carlo) simulation
- Based on Scenarios (Units, environments, etc.)
 - Excursion (Variation on Scenario)
- Replication - a simulation using the scenario with a random initial seed
- Run - a series of replications of a scenario
- Analysis based on results of Run (**statistical validity**)



JWARS' Use of the Environment



Current Applications

- Sensors affected by day/night, cloud cover
- Direct fire affected by day/night; PLOS affected by terrain/time of year
- Land speed affected by day/night; Maneuver and Mobility affected by precipitation, temperature, snow cover
- A2G acquisition and adjudication affected by ceiling and visibility
- ABL affected by ceiling and cloud height



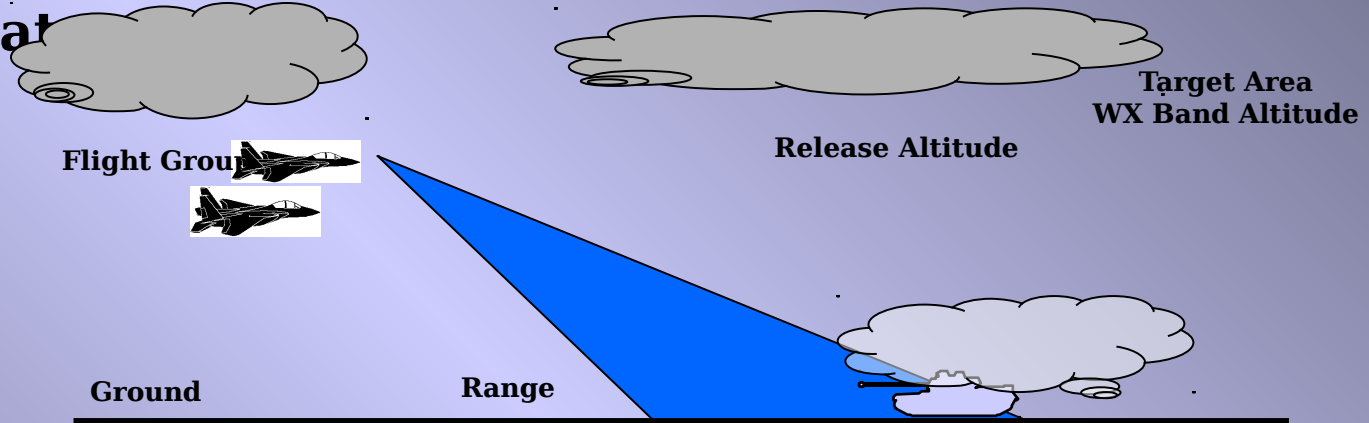
Current Applications

- Aircraft launch affected by visibility, icing, sea state, blowing sand, and surface wind
- Forcible Entry affected by sea state and wind speed
- Chemical defense affected by wind (dd/ff), time of day, cloud cover, stability
- Combat effectiveness in MOPP gear affected by temperature and dewpoint
- ASW affected by ocean conditions



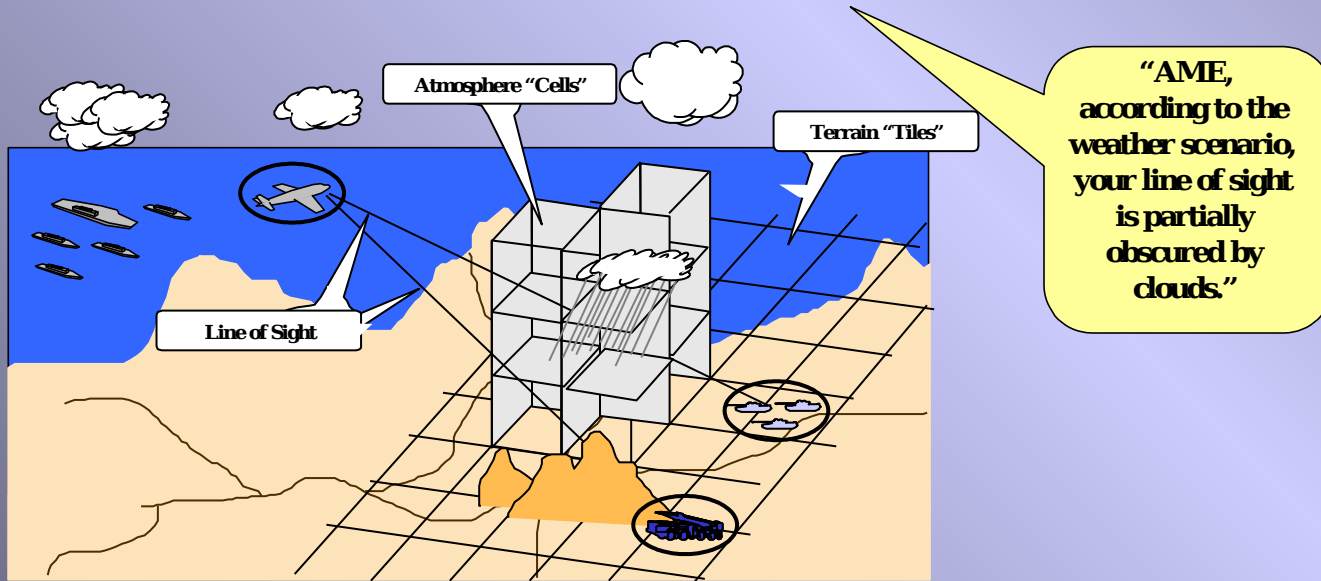
Current Environmental Effects in

6. Air to Ground Adjudication affected by ceiling and visibility at



Environment Manager - tells BSEs and other components

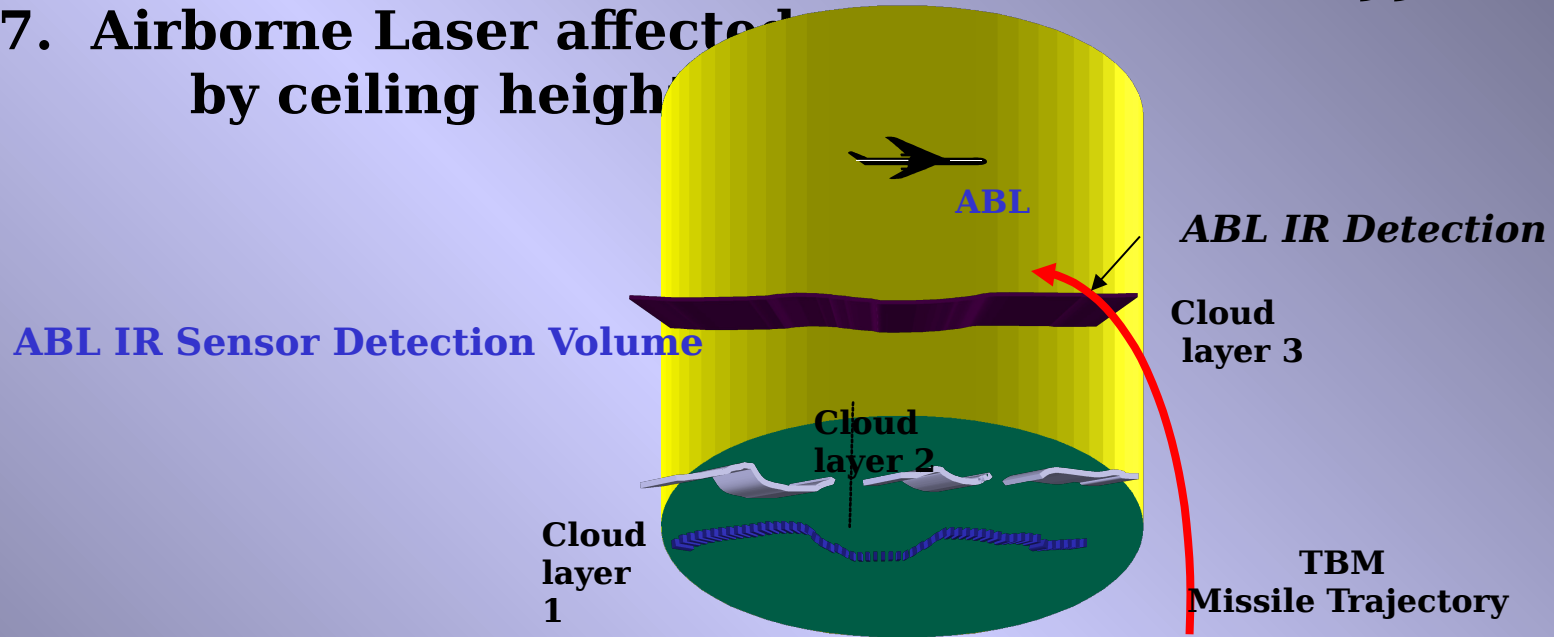
about the physical environment in which they operate.





Current Environmental Effects in

7. Airborne Laser affected by ceiling height



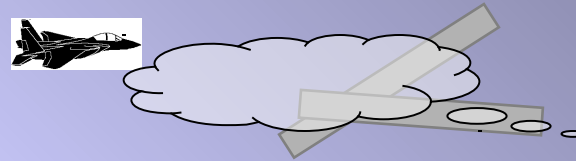
8. Aircraft takeoff affected by environment e.g., visibility, icing, sea state, blowing sand, and surface wind





Future Environmental Effects in JVA

Aircraft recovery affected by ceiling, visibility, and surface wind



Sensor capabilities affected by clouds, cloud-free-line-of-sight, and space weather conditions



Communications disrupted by space environment

Integrated Weather Effects Decisions Aids (IWEDAs) for Blue and Red



JWARS-ASNE History

- Liaison Officer (since 1997)
 - Part-time (Formerly Full-time)
 - Two-way interface
- JWARS Users Environment Sub-Group
 - Action Officer
 - Meets Semi-annually (next in Fall 03)
- Atmosphere data for JWARS Playboxes
 - Development: SWA (99), NEA (99)
 - ACMES: SWA (03), EA (03), NWSA (03), EUCOM (03); 18 Months (1 Jan 97 - 30 Jun 98)
 - Other playboxes (03-.....) - Potential Homeland Defense (03)
 - Other periods (03-.....) - EA



FY03/04 Milestones

- JWARS Release 1.5 – July 03 (31 Users)
 - Playboxes
 - SWA in Rel 1.5
 - EA/NWSA data (upon request) in Rel 1.5
 - Release 1.5+ in development
 - 18 month study – basis for development for Release 1.6
- Release 1.6
 - Pending outcome of R1.5 study
 - July 04 (?)
- USJFCOM assumes management – Oct 04



Current*/Anticipated JWARS Users

OSD/J Staff*
Korea*

CENTCOM*

CFC-

PACOM*

EUCOM*

SOCOM*

SOUTHCOM

SPACECOM*

USJFCOM*

STRATCOM*

TRANSCOM*

NRO*

USAF (SMC, ESC, SWC, AFMC, ASC,
AMC, AFSAA, ESC, ACC, AFWGI*,
AFSWC*, AFIT, AFRL*)



Current*/Anticipated JWARS Users

SPAWAR*

NRL

NPS

NAWC*

NSWC

NUWC

BMDO

CAA*

JWAC

Forts Benning, Bliss, Bragg, Hood, Knox,
Wood, Polk, Sill, Lewis

FORSCOM

JWAC

TRAC*

MCCDC*

DISA*

DIA



Joint Warfare System (JWARS)

- **ESG/ACMES** currently provides only the atmospheric component of the JWARS Integrated Natural Environment
- The JWARS Terrain component is provided through a direct arrangement with Topographic Engineering Center (TEC)
- The JWARS Ocean component is provided through arrangements via the Ocean Executive Agent (OEA) and select ocean domain experts at NRL, NAWC, and JHU/APL



JWARS

- JWARS desires to make one request to ESG for its INEARP when it defines a new Area of Interest (playbox) or needs new data for an existing AOI. This will require an integrated production process.



JWARS Summary

- Emphasize inter-domain consistency through proper coupling (forcing) of models used in production
- Leverage INEARP technology (ESG and SEDRIS) to provide a single, integrated INE deliverable to JWARS
- Expect Manual Integration efforts through '03 with increasing automation of the JWARS process in '04



Questions?

